

565—51.6(458A) Drilling. Unless altered, modified, or changed for particular common sources of supply, upon notice and hearing before the department, the following rules shall apply to all wells drilled.

51.6(1) *Sealing off strata.* During the drilling of any well for production of or exploration for oil, gas or metallic minerals, all oil, gas, and water strata above and below the producing horizon shall be sealed or separated where necessary in order to prevent their contents from passing into other strata.

All fresh waters and waters of present or probable value for domestic, public, commercial or livestock purposes shall be confined to their respective strata and shall be adequately protected by methods approved by the department. Special precautions shall be taken in drilling and abandoning wells to guard against any loss of artesian water from the strata in which it occurs, and the contamination of artesian water by objectionable water, oil, or gas.

All water shall be shut off and excluded from the various oil and gas bearing strata which are penetrated. Water shutoffs shall ordinarily be made by cementing casing with or without the use of mud-laden fluid.

51.6(2) *Casing and tubing requirements.* All wells drilled for oil, gas or production of metallic minerals shall be completed with strings of casing which shall be properly cemented at sufficient depths to protect all water, oil, or gas bearing strata.

Sufficient cement shall be used on surface to fill the annular space back of the casing to the bottom of the cellar or to the surface of the ground. All strings of casing shall stand cemented under pressure for at least 12 hours before drilling plug or initiating tests. The term “under pressure” as used herein will be complied with if one float valve is used or if pressure is otherwise held. Cementing shall be by the pump and plug method, or other method approved by the state geologist.

All flowing wells shall be tubed, the tubing shall be set as near the bottom as practicable, but tubing perforations shall not be above the top of pay unless authorized by the department.

51.6(3) *Defective casing or cementing.* In any well that appears to have defective, faultily cemented, or corroded casing which will permit or may create underground waste, the operator shall proceed with diligence to use the appropriate method and means to eliminate such hazard of underground waste. If such hazard of waste cannot be eliminated, the well shall be properly plugged and abandoned.

51.6(4) *Blow-out prevention.* In all drilling operations proper and necessary precautions shall be taken for keeping the well under control, including the use of a blow-out preventer and high pressure fittings attached to properly cemented casing strings, where indicated by geologic conditions.

51.6(5) *Pulling outside string of casing.* In pulling outside strings of casing from any oil or gas well, the space outside the casing left in the hole shall be kept and left full of mud-laden fluid or cement of adequate specific gravity to seal off all fresh and salt water strata and any strata bearing oil or gas not producing. No casing shall be removed without the prior approval of the department.

51.6(6) *Safety rules.* All oil wells shall be cleaned into a pit or tank, not less than 40 feet from the derrick floor and 150 feet from any fire hazard. All flowing oil wells must be produced through an approved oil and gas separator or emulsion treater of ample capacity and in good working order. No boiler or portable electric lighting generator shall be placed or remain nearer than 150 feet from any producing well or oil tank. Any rubbish or debris that might constitute a fire hazard shall be removed to a distance of at least 150 feet from the vicinity of wells and tanks. All waste shall be disposed of in such manner as to avoid creating a fire hazard and to comply with the rules of the environmental protection commission. The drilling fluid level shall be maintained continuously at a height sufficient to control subsurface pressures. During the course of drilling, blow-out preventers shall be tested at least once each 24-hour period, and results of the test shall be noted in the driller’s record.

51.6(7) *Preservation of cores and samples.* Sample cuttings shall be taken at 5-foot intervals and at each change of formation, if less than 5 feet thick, in all wells drilled for oil, gas or metallic mineral exploration or production, for the storage of dry natural gas, or casinghead gas, and for the development of reservoirs for the storage of liquid petroleum gas in the state of Iowa, unless a geophysical log is to be taken for the entire depth of the well. Where a geophysical log is to be taken for the entire depth of the well, sample cuttings shall be taken at 10-foot intervals and at each formation change if less than 10 feet thick. The state geologist may grant a variance from the 10-foot sample interval under special conditions.

Each sample shall be carefully identified as to well name and depth of sample, and all samples shall be shipped at the operator's expense to the office of the state geologist.

The operator of any well drilled as provided in the foregoing paragraph shall, during the drilling of, or immediately following the completion of any given well, advise the state geologist, of all intervals that are to be cored, or have been cored, and such cores as are taken shall be preserved and forwarded to the office of the state geologist at the operator's expense.

This rule shall not be construed as prohibiting the operator from taking samples of the core for identification and tests pertaining to oil and gas or metallic minerals. In the event that it is necessary for the operator to utilize all or any portion of the core to the extent that representative samples, sufficiently large to analyze, are not available for the state, the operator shall furnish the state geologist with the results of identification or testing procedures.

51.6(8) *Well completion or recompletion report and well log.* Within ten days after completion of a well drilled for oil or gas or production of metallic minerals or for the storage of dry natural gas, or casinghead gas, or for the development of reservoirs for the storage of liquid petroleum gas, the operator or the operator's agent shall file with the state geologist a complete log or record of the well, duly signed, on forms prescribed by the department. This record shall be filed even though samples of the drill cuttings have been taken and preserved for subsequent delivery to the department. The logs on the wells shall be forwarded to the department and shall be confidential for a period of six months when so requested by the operator in writing.

A proper log on any well shall include all normally recorded information on the following:

- a. Depth to and thickness of water-bearing beds, including, where measured, the static water level and volume of such water.
- b. Lithology of formations penetrated, including color, hardness, and character of the rock, and particularly showing the position and thickness of coal beds and deposits of mineral materials of economic value.
- c. Any caverns, large voids, losses of circulation, and sudden appreciable changes in water level.
- d. A record of all oil, gas, and highly mineralized water encountered, including fill-up, volumes, and pressures.
- e. A record of all casing and liner used, including the size, weight, amount, and depth set, the amount of cement used on each casing string, and the amount of casing stripped from the hole on completion or abandonment of the well.
- f. Data on drill stem tests.
- g. Generalized description of any core taken during drilling.
- h. Data on perforating acidizing, fracturing, shooting, and testing.
- i. Data on bridge plugs set, make and type of plug, depth set, whether left in place or removed, and details of plug back operation below the bridge.
- j. Electrical or other geophysical logging.

51.6(9) *Stratigraphic test wells.* All stratigraphic test wells shall be plugged in accordance with the provisions of 51.15(458A).

Any mechanical logs taken must be filed with the state geologist within the time limits set forth below. Lithologic samples must be collected during the drilling of all stratigraphic test wells in accordance with the provisions of 51.6(7).

All records, samples, and logs required under this rule must be filed with the state geologist six months after completion of the program set forth in the original application. If the company so requests in writing, these records, samples, and logs shall be kept confidential for an additional period of one year after filing.

51.6(10) *Wells for storage of liquid petroleum gas.* Only one fee shall be required for the drilling of wells for the development of each reservoir for the storage of liquid petroleum gas but an application for a permit to drill shall be filed with the department and a permit issued prior to the drilling of each well. The application for a permit to drill a single well or the first in a series of wells for this purpose shall be accompanied by a complete set of plans for the development of the reservoir and by a plat of the reservoir area with all contemplated wells and the reservoir limits indicated thereon.

A blanket bond of \$30,000 must be filed with the department on a form prescribed by the department conditioned on compliance with the laws of the state of Iowa and the rules and orders of the department. Each bond shall be executed by an acceptable corporate surety authorized to do business in the state of Iowa. Compliance with the blanket bond requirement of 51.5(458A) shall satisfy the blanket bond requirement herein.

All records, samples and logs required under this rule must be filed with the state geologist in accordance with the provisions of 51.6(8).

When any well is no longer used for the purpose for which it was drilled, the well shall be plugged in accordance with the provisions of 51.15(458A).

51.6(11) *Wells for storage of dry natural gas.* No application, fee, organization report, bond nor permit shall be required for the drilling of wells for the storage of dry natural gas in underground basins or watercourses for which a permit is required and has been obtained under the provisions of Iowa Code chapter 455B. In lieu of a formal application and permit for wells otherwise required under the provisions of Iowa Code chapter 458A, and these rules adopted pursuant thereto, the owner or operator thereof shall give notice to the state geologist of intent to drill at least 5 days prior to initiation of drilling of each well. The owner or operator of the wells shall submit monthly to the state geologist a report of activities during the preceding 30 days as well as contemplated action during the following 30-day period, providing thereby at least 5 days' prior notice of any contemplated action. Wells may not be drilled at points more than one-quarter mile from the points indicated in the forecasts without at least 5 days' prior notice to the state geologist or its specific approval thereof. The owner or operator shall drill, operate, maintain, abandon and plug the wells and shall file reports, records, samples, cores, and logs, in accordance with these rules and the orders and requirements of the department and the state geologist.